

## Recommendations on the Number of Decimal Places in the Daily CPI and CTI values, Indexation coefficient and Derived Dirty Price

Nasdaq OMX Iceland (the Exchange) has recently endeavoured to standardise practices on the Icelandic bond and bill market to reflect general practices on other leading markets. The main purpose of this standardisation is to co-ordinate business practices by market participants while at the same time facilitating access by foreign investors. With this objective in mind, the Exchange has issued recommendations for the market, cf. "Recommendations on the Principal Characteristics and Calculations of Listed Bonds and Bills", issued 23 August 2006, and "Recommendations concerning the method of calculating Daily CPI and CTI Index values", issued 31 May 2007 to name a few.

The Exchange members have indicated that they consider the lack of consistency in the daily CPI and CTI values used to calculate indexation, the indexation coefficient and determination of dirty prices derived from clean prices to be in need of improvement, especially the fact that market participants do not use the same number of decimal places. This results in mismatches between the calculation systems of the Exchange members, causing unnecessary transaction costs.

Therefore Nasdaq OMX Iceland has decided, following a review process, to recommend to market participants that their calculations of the daily index, the index coefficient and derived dirty price follow the recommendations below. For more information, please contact the Exchange's Trading division ([floor.ice@nasdaqomx.com](mailto:floor.ice@nasdaqomx.com), tel. +354 525-2850).

### Recommendation No. 1: Daily indices with five decimal places

Up until now there has been no specific rule as to the number of decimal places in the daily CPI and CTI values calculated for indexation purposes. Inconsistent practices have resulted in the calculated price and yield on indexed securities differing slightly from one market participant to the next. Leading international markets for indexed bonds calculate the daily index values with five decimal places, as shown in Table 1. The Exchange recommends that market participants use five decimal places in calculating the daily CPI and CTI values used for indexation.

**Table 1. Number of decimal places in the daily index values of various countries**

Country	Number of decimal places in daily index values
US	5
United Kingdom	5
France	5
Italy	5

<sup>1</sup> Recommendations No. 1 and 2 originally published 9 January 2007

Canada	5
South Africa	15
Sweden	2

Source: Mark Deacon, Andrew Derry og Dariush Mirfendereski, *Inflation indexed securities: Bonds, Swaps & Other Derivatives* (England: John Wiley & Sons, 2004).

### **Recommendation No. 2: Six decimal places in derived dirty prices**

Practices appear to vary from one participant to the next in the number of decimal places used in calculating dirty prices derived from clean prices. As a result, inconsistencies occur between market participants in settling securities quoted at clean prices. Table 2 shows the practice in various countries with regard to the number of decimal places in settlement prices, based on a face value of 100 in the currency used by the country concerned. The Exchange recommends that market participants use six decimal places in calculating dirty prices derived from clean prices, in accordance with UK and US practice.

**Table 2. Number of decimal places used in settlement prices in various countries**

<b>Country</b>	<b>Number of decimal places in settlement price based on face value of 100</b>
Australia	9
US	6
United Kingdom	6
France	3
Canada	3
Sweden*	0 , 3

\* The settlement price of Swedish indexed zero coupon securities is specified without decimal places.

Source: Mark Deacon, Andrew Derry og Dariush Mirfendereski, *Inflation indexed securities: Bonds, Swaps & Other Derivatives* (England: John Wiley & Sons, 2004).

### **Recommendation No. 3: Five decimal places in indexation coefficient**

In recommendation No.1 as seen above and originally published in 2007, the Exchange recommended that market participants use five decimal places in calculating the CPI and CTI values used for indexation. Market participants have indicated that coordination is also needed when calculating the indexation coefficient itself, i.e. when the daily index value is divided by the base index as seen in the formula below.

$$\text{Indexation Coefficient} = \frac{\text{Daily Index}}{\text{Base Index}}$$

This discrepancy has lead market participants to different results when calculating prices and yields of index linked securities. Leading international markets for indexed bonds calculate the indexation coefficient with five decimal places, as shown in Table 3. The Exchange therefore recommends that market participants use five decimal places in indexation coefficient used for indexation.

**Table 3. The number of decimal places in indexation coefficient in various countries.**

<b>Country</b>	<b>Number of decimals in indexation coefficient</b>
US	5
United Kingdom	5
France	5
Italy	5

*Sources:*

- i. U.S. Department of the Treasury, Bureau of the Public Debt (2010). *Treasury Direct – Institutional – TIPS/CPI Data*. Visited May 20, 2010 at <http://www.treasurydirect.gov/instit/annceresult/tipsdpi/tipsdpi.htm>
- ii. UK Debt Management Office (2010). Visited June 2, 2010 at <http://www.dmo.gov.uk/index.aspx?page=Gilts/Indexlinked>
- iii. Agence France Trésor (2008). *Agence France Trésor – AFT – OATis*. Visited June 2, 2010 at [http://www.aft.gouv.fr/aft\\_en\\_21/debt\\_management\\_51/products\\_248/oatis\\_256/index.html](http://www.aft.gouv.fr/aft_en_21/debt_management_51/products_248/oatis_256/index.html)
- iv. Dipartimento del Tesoro (2010) *Department of Treasury – Treasury Securities*. Visited June 2, 2010 at [http://www.dt.tesoro.it/en/debito\\_pubblico/titoli\\_di\\_stato/](http://www.dt.tesoro.it/en/debito_pubblico/titoli_di_stato/)